



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,117	11/18/2003	Yasushi Iida	645-165	6100
47888 7590 08/04/2008 HEDMAN & COSTIGAN P.C. 1185 AVENUE OF THE AMERICAS NEW YORK, NY 10036				
EXAMINER				
EICHELMAYER, ALIX ELIZABETH				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
08/04/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/716,117

**Applicant(s)**

INDA, YASUSHI

**Examiner**

Alix Elizabeth Echelmeyer

**Art Unit**

1795

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3-6 and 8-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-6 and 8-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is in response to the amendment filed April 20, 2008. Claim 1 has been amended. Claims 1, 3-6 and 8-17 are pending and are rejected finally for the reasons given below.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-6 and 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munshi (US 6,645,675) in view of Fu (US 5, 702, 995).

Munshi teaches a solid electrolyte for lithium batteries. The electrolyte is preferably 0.2  $\mu\text{m}$  - 3  $\mu\text{m}$  thick (column 7 lines 19-22). The electrolyte is made of a polymer, a salt, and an ion conducting material, the lithium ion conductive inorganic substance (column 6 lines 13-14, 20-28).

The product-by-process limitations of claims 3, 14 and 15 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983), MPEP 2113).

As for claim 4, the electrolyte of Munshi has an ion conductivity of at least  $1 \times 10^{-4}$  S/cm at 25°C (column 5 lines 51-53).

With regard to claim 5, the electrolyte comprises the lithium ion conductive inorganic substance in an amount of up to 69% by weight, since the minimum amount by weight of polymer binder is 31% (column 6 lines 8-19).

As for claim 9 and 11, the inorganic substance is made of a powder, with the diameter being less than 0.1  $\mu\text{m}$  (column 5 lines 60-61).

With regard to claim 12, the electrolyte of Munshi comprises a polymer, such as polyvinylidene fluoride, as a binder of the solid electrolyte (column 6 lines 40-41; column 7 lines 1-4). Polyvinylidene fluoride is identified in the instant specification as a polymer binder (page 8 first full paragraph).

Regarding claim 13, the polymer of Munshi also includes a salt (column 5 line 51 - column 6 line 7),

As for claims 16 and 17, the anode of Munshi may be made by sputtering lithium metal in a thickness of 0.1 - 100  $\mu\text{m}$  (column 25 lines 61-62; column 26 lines 8-10). Additionally, the electrode is taught to have a thickness less than 5  $\mu\text{m}$  (column 27 line 1), The diameter of the sputtered lithium particles would necessarily be less than 3  $\mu\text{m}$  for thicknesses of, for example, 3  $\mu\text{m}$ .

Munshi fails to teach a lithium ion conductive glass-ceramic as the inorganic substance.

Fu teaches the use of glass-ceramics having a main crystal phase and also having high lithium-ion conductivity (abstract). Fu teaches that the use of these glass-ceramics in solid electrolytes is advantageous because it produces electrolytes that have high conductivity and are easier to form into compact designs such as a thin film than previous solid electrolytes (column 1 lines 57-59).

It would be desirable to use the glass-ceramics of Fu in the solid electrolyte of the battery of Munshi in order to make an electrolyte that is easier to form and high in conductivity.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the glass-ceramic of Fu with the solid electrolyte of the battery of Munshi in order to make an electrolyte that is easier to form and high in conductivity.

#### ***Response to Arguments***

4. Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection.

Applicant argued on page 5 of the remarks that Inda et al. do not teach specifically the thickness of less than 20  $\mu\text{m}$ . It has been held that discovering the optimum value of a result effective variable is within the ordinary level of skill in the art (MPEP 2144.05 IIB).

**Conclusion**

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. De Jonghe et al. (US 6,911,280) teach an inorganic glass-ceramic solid electrolyte (column 8 lines 8-20).
6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1795

aee

/Susy Tsang-Foster/  
Supervisory Patent Examiner, Art Unit 1795